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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/854,408	05/10/2001	Trent J. Brundage	EWG-144 US	8219

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EXAMINER	
TESLOVICH, TAMARA	

ART UNIT	PAPER NUMBER
2137	

DATE MAILED: 07/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/854,408	BRUNDAGE, TRENT J.	
	Examiner	Art Unit	
	Tamara Teslovich	2137	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 April 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 May 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12.17.04 1.24.05*. 02.03.05
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This office action is in response to Applicant's Amendments filed April 11, 2005 and Remarks filed December 17, 2004.

Claims 1-28 are pending.

Response to Arguments

Applicant's arguments with respect to claims 1-23 have been considered but are moot in view of the new ground(s) of rejection.

Drawings

The drawings are objected to because they do not include suitable descriptive legends as per 37 CFR 1.84(o). Drawings 4A, 4B, and 4C are objected to as failing to provide sufficient enough information for the Examiner to understand their importance in relation to Applicant's invention. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several

views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 24, 25, 27, and 28 recite the limitation "the method of claim 21". There is insufficient antecedent basis for this limitation in these claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 12-16 and 21-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Wang*, U.S. Patent 5,113,445 and further in view of *Rhoads*, U.S. Patent 5,862,260.

Claim 12 refers to a robot for handling items, said robot including a camera for acquiring an electronic image of a printed image containing a digital watermark, a computer including a program for reading a digital watermark in an electronic image acquired by said camera and a controller for controlling said robot in response to the data acquired from said digital watermark.

Wang refers to a system for encoding data in a machine-readable graphic image form having an increased capacity for encoded information (col.2 lines 3-7) which is then transferred onto a data carrier means (e.g. the surface of a machine part) (col.2 lines 23-26). Wang's system further comprises recognition means (camera) for converting the image from the data carrier means into electrical signals representative of the graphic indicia and means for decoding the signals into output signals (col.2 lines 50-55) to be used in a variety of systems, including those controlling robotic systems (col.4 lines 64-67; col.6 lines 6-15).

Wang fails to teach the placement of a first part on a second part wherein the 'machine-readable graphic image' contains a digital watermark.

Rhoads describes the use of image processing software such as Adobe (col.90 lines 54-66) in order to embed watermarks in for the purpose of marking of items, either through an innocuous carrier (e.g. a photograph associated with the product), or by encoding the microtopology of the merchandise's surface or a label thereon for use in systems where the more generally used barcodes and universal product codes may be undesirable (col.94 lines 55-63). Rhoads goes on to disclose a plurality of industries (e.g. automobile and airlines) and how they stenographically mark industrial parts to

provide inconspicuous identification and authentication tags instead of relying on paper tags that can easily be removed and counterfeited (col.95 lines 6-11).

It would have been obvious to a person of average skill in the area at the time of the invention to include within Wang the digital watermarks as described in Rhoads to allow for an increase in the amount of data encoded onto the label that can be quickly and easily decoded and used to control the orientation, rotation and translation said parts.

As per claim 13, the combined system of Wang and Rhoads discloses the robot cited in claim 12 including means for reading a grid signal from said digital watermark (see Rhoads col.72 lines 43-59).

As per claim 14, the combined system of Wang and Rhoads discloses the robot cited in claim 13 wherein said printed image is on an item to be handled by said robot (see Wang col.2 lines 23-26).

As per claim 15, the combined system of Wang and Rhoads discloses the robot cited in claim 14 including means for determining a distance from said camera to the printed image from said grid signal (see Rhoads col.72 lines 43-59).

As per claim 16, the combined system of Wang and Rhoads discloses the robot cited in claim 14 including means for determining an orientation of the printed image from said grid signal (see Rhoads col.72 lines 43-59).

Claim 21 refers to a robot for handling items, said robot comprising: an image sensor for sensing image data of an item including a machine-readable code provided on a surface thereof wherein the machine-readable code comprises an orientation component; electronic processing circuitry; and memory including instruction stored therein for execution by the electronic processing circuitry, the instructions including instruction to: analyze image data captured by the image senor, determine from analyzed image data an orientation of the item relative to the orientation component, and provide position information based on a determined orientation of the item.

Wang refers to a system for encoding data in a machine-readable graphic image form having an increased capacity for encoded information (col.2 lines 3-7) which is then transferred onto a data carrier means (e.g. the surface of a machine part) (col.2 lines 23-26). Wang's system further comprises recognition means for sensing and converting the image into electrical signals representative of the graphic indicia and means for decoding the signals into output signals (col.2 lines 50-55) to be used in a variety of systems, including that of controlling a robotic system (col.4 lines 64-67; col.6 lines 6-15).

Wang fails to teach wherein 'machine-readable graphic image' is comprised of a machine-readable code

Rhoads describes the marking of items, either through an innocuous carrier (e.g. a photograph associated with the product), or by encoding the microtopology of the merchandise's surface or a label thereon for use in systems where the generally used barcodes and universal product codes may be undesirable (col.94 lines 55-63). Rhoad's solution includes the use of watermarks embedded using image processing software such as Adobe (col.90 lines 54-66) comprising grid signals for orientation purposes as well as a plurality of other information to be used by a variety of systems (col.72 lines 43-59). Rhoads goes on to describe how many industries (e.g. automobile and airlines), stenographically mark industrial parts to provide inconspicuous identification and authentication tags instead of relying on paper tags that can easily be removed and counterfeited (col.95 lines 6-11).

It would have been obvious to a person of average skill in the area at the time of the invention to include within Wang the machine readable code as described in Rhoads to allow for an increase in the amount of data encoded onto the label that can be quickly and easily decoded and used to control the orientation, rotation, and translation of said parts.

As per claim 22, the combined system of Wang and Rhoads discloses the robot of claim 21, wherein the item includes redundant instances of machine-readable code provided on the surface (see Rhoads col.91 lines 52-55).

As per claim 23, the combined system of Wang and Rhoads discloses the robot of claim 21, wherein the position information comprises at least one of an angular rotation and relative distance (see Rhoads col.72 lines 43-59).

As per claim 24, the combined system of Wang and Rhoads discloses the robot of claim 21, wherein the machine-readable code comprises stenographic encoding (see Rhoads col.95 lines 6-11).

As per claim 25, the combined system of Wang and Rhoads discloses the robot of claim 21, wherein the machine-readable code comprises digital watermarking (see Rhoads col.90 lines 54-66).

As per claim 26, the combined system of Wang and Rhoads discloses the method of claim 17, wherein the stenographic encoding comprises digital watermarking (see Rhoads col.90 lines 54-66).

Claims 1-11, 17-20 and 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Wang*, U.S. Patent 5,113,445, further in view of *Rhoads*, U.S. Patent 5,862,260, and further in view of *Schaffer* et al., U.S. Patent 6,282,528 B1.

Claim 1 refers to a method for controlling placement of a first part on a second part comprising placing a printed image containing a digital watermark on at least one of

said parts, capturing a digital image of said printed image, reading a grid signal contained in said digital watermark, and determining the angular rotation of at least one of said parts from said grid signal.

Wang refers to a method for encoding data in a machine-readable graphic image form having an increased capacity for encoded information (col.2 lines 3-7), which is then transferred onto a data carrier means (e.g. the surface of a machine part) (col.2 lines 23-26). Wang's system further comprises recognition means for converting the image into electrical signals representative of the graphic indicia and means for decoding the signals into output signals (col.2 lines 50-55) to be used in a variety of systems, including that of a robotic system (col.4 lines 64-67; col.6 lines 6-15).

Wang fails to teach the placement of a first part on a second part wherein the first part contains a 'machine-readable graphic image' comprised of a digital watermark and wherein the data contained therein is used to determine the angular rotation of at least one of the parts.

Rhoads describes the marking of items, either through an innocuous carrier (e.g. a photograph associated with the product), or by encoding the microtopology of the merchandise's surface or a label thereon for use in systems where the generally used barcodes and universal product codes may be undesirable (col.94 lines 55-63). Rhoad's solution includes the use of watermarks embedded using image processing software such as Adobe (col.90 lines 54-66) comprising grid signals for orientation purposes as well as a plurality of other information to be used by a variety of systems (col.72 lines 43-59). Rhoads goes on to describe how many industries (e.g. automobile

and airlines), stenographically mark industrial parts to provide inconspicuous identification and authentication tags instead of relying on paper tags that can easily be removed and counterfeited (col.95 lines 6-11).

Schaffer teaches a method for controlling placement of a first part on a second part using a vision alignment system to improve placement accuracy of the first part (electronic component) on the second part (PCB) including the necessary means to calculate possible deviations such as rotation and translation of said first part with respect to said second part (col.2 lines 45-49; col.6 lines 33-3).

It would have been obvious to a person of average skill in the area at the time of the invention to include within Wang the digital watermarks as described in Rhoads to allow for an increase in the amount of data encoded onto the label that can be quickly and easily decoded and used to control the rotation and translation of the first part onto the second part described within Schaffer to align parts properly.

As per claim 2, the combined system of Wang, Rhoads and Schaffer discloses the method of claim 1 including reading other payload data from said digital watermark (see Wang col.6 lines 6-11).

As per claim 3, the combined system of Wang, Rhoads and Schaffer discloses the method of claim 1 wherein said grid signal is used to determine the location of at least one of said parts (see Schaffer col.2 lines 45-49; col.6 lines 33-3).

As per claims 4 and 5, the combined system of Wang, Rhoads and Schaffer discloses the method recited in claim 1 wherein said first part is an electronic component and wherein said second part is a printed circuit board (see Schaffer col.2 lines 45-49).

Claims 6-8 are directed towards a system's implementation of the method of claims 1-3 and are rejected by similar rationale.

As per claim 9, the combined system of Wang, Rhoads and Schaffer discloses the system of claim 6 wherein the orientation is used to determine a distance of said at least one of said parts from said means for reading (see Schaffer col.6 lines 35-36).

Claims 10-11 are directed towards a system's implementation of the method of claims 4-5 and are rejected by similar rationale.

Claim 17 refers to a method for controlling placement of a first part on a second part wherein the first part includes stenographic encoding redundantly provided thereon, the stenographic encoding including an orientation component, said method comprising: receiving image data corresponding to at least a portion of the first part, the portion including at least one redundant instance of the stenographic encoding; reading the orientation component of the stenographic encoding; determining an orientation of the first part through reference to at least the orientation component of the stenographic

encoding; controlling placement of the first part on the second part through reference to at least the determined orientation of the first part.

Wang refers to a method for encoding data in a machine-readable graphic image form having an increased capacity for encoded information (col.2 lines 3-7) which is then transferred onto a data carrier means (e.g. the surface of a machine part) (col.2 lines 23-26). Wang's system further comprises recognition means for converting the image into electrical signals representative of the graphic indicia and means for decoding the signals into a plurality of output signals (col.2 lines 50-55) to be used in a variety of systems, including that of a robotic system (col.4 lines 64-67; col.6 lines 6-15).

Wang fails to teach the placement of a first part on a second part wherein the first part contains a 'machine-readable graphic image' comprised stenographic encoding redundantly provided thereon and wherein the orientation component contained therein is used to determine the orientation of the first part.

Rhoads describes the marking of items, either through an innocuous carrier (e.g. a photograph associated with the product), or by redundantly (col.91 lines 52-55) encoding the microtopology of the merchandise's surface or a label thereon for use in systems where the generally used barcodes and universal product codes may be undesirable (col.94 lines 55-63). Rhoads goes on to describe how many industries (e.g. automobile and airlines), stenographically mark industrial parts to provide inconspicuous identification and authentication tags instead of relying on paper tags that can easily be removed and counterfeited (col.95 lines 6-11).

Schaffer teaches a method for controlling placement of a first part on a second part using a vision alignment system to improve placement accuracy of the first part (electronic component) on the second part (PCB) including the necessary means to calculate possible deviations such as orientation, rotation and translation of said first part with respect to said second part (col.2 lines 45-49; col.6 lines 33-3).

It would have been obvious to a person of average skill in the area at the time of the invention to include within Wang the digital watermarks as described in Rhoads to allow for an increase in the amount of data encoded onto the label that can be quickly and easily decoded and used to control the orientation, rotation and translation of the first part onto the second part described within Schaffer to align parts properly.

As per claim 18, the combined system of Wang, Rhoads and Schaffer discloses the method of claim 17, wherein the determined orientation of the first part comprises an angular rotation of the first part (see Schaffer col.2 lines 45-49; col.6 lines 33-3).

As per claim 19, the combined system of Wang, Rhoads and Schaffer discloses the method of claim 17, wherein the determined orientation of the first part comprises an relative distance of the first part (see Rhoads col.72 lines 43-59).

As per claim 20, the combined system of Wang, Rhoads and Schaffer discloses the method of claim 17, wherein the stenographic encoding further comprises an identifier to identify the part (see Rhoads col.95 lines 6-11).

As per claim 27, the combined system of Wang and Rhoads discloses the robot of claim 21, but fails to teach wherein the first part comprises an electronic component.

Schaffer teaches a system for controlling placement of a first part on a second part using a vision alignment system to improve placement accuracy of the first part (electronic component) on the second part (PCB) including the necessary means to calculate possible deviations such as rotation and translation of said first part with respect to said second part (col.2 lines 45-49; col.6 lines 33-3).

It would have been obvious to a person of average skill in the area at the time of the invention to include within the combined system of Wang and Rhoads, wherein the first part comprises an electronic component as taught in Schaffer to provide for the automated production of circuit boards.

As per claim 28, the combined system of Wang and Rhoads discloses the robot of claim 21, but fails to disclose wherein the robot handles items in a pick-and-place system and wherein at last one of the items comprises and electronic component.

Schaffer teaches a pick-and-place system for controlling placement of a first part on a second part using a vision alignment system to improve placement accuracy of the first part (electronic component) on the second part (PCB) including the necessary means to calculate possible deviations such as rotation and translation of said first part with respect to said second part (col.2 lines 45-49; col.6 lines 33-3).

It would have been obvious to a person of average skill in the area at the time of the invention to include within the combined system of Wang and Rhoads, Schaffer's electronic component utilized within a pick-and-place system to provide for the automated production of circuit boards.

Conclusion

Applicant's submission of an information disclosure statement under 37 CFR 1.97(c) with the fee set forth in 37 CFR 1.17(p) on December 17, 2004, January 24, 2005 and February 3, 2005 prompted the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 609(B)(2)(i). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tamara Teslovich whose telephone number is (571) 272-4241. The examiner can normally be reached on Mon-Fri 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Emmanuel Moise can be reached on (571) 272-3865. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

T. Teslovich

June 22, 2005

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